

Customer No.: 31561
Docket No.: 11579-US-PA
Application No.: 10/710,419

AMENDMENTS

In The Claims

1. (currently amended) A wafer structure, comprising:
 - a wafer having a plurality of bonding pads, wherein the bonding pads are disposed on an active surface of the wafer;
 - a first passivation layer covering the active surface of the wafer, wherein the bonding pads are not fully covered by the first passivation layer;
 - an under ball metallurgy (UBM) layer disposed on each of the bonding pads, wherein the UBM layer comprises a first metallic layer and a second metallic layer disposed on the first metallic layer, the first metallic layer permanently covering a portion of the first passivation layer, and the UBM layer above each of the bonding pads is detached from the others;
 - a second passivation layer permanently disposed on the first passivation layer, wherein the second metallic layer of the UBM layer does not cover the second passivation layer, and the second passivation layer covers a peripheral portion of the first metallic layer, without covering the second metallic layer; and
 - a plurality of bumps, disposed on the UBM layer.
2. (original) The structure of claim 1, wherein the UBM layer comprises:
 - an adhesion layer, disposed on the bonding pad;
 - a barrier layer disposed on the adhesion layer;
 - a wetting layer disposed between the barrier layer and the bump.
3. (original) The structure of claim 2, wherein the adhesion layer is a single layer or comprises a plurality of layers.
4. (original) The structure of claim 2, wherein the barrier layer is a single layer or

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comprises a plurality of layers.

5. (original) The structure of claim 2, wherein the wetting layer is a single layer or comprises a plurality of layers.

6. (original) The structure of claim 2, wherein the first metallic layer includes the adhesion layer and the second metallic layer includes the barrier layer and the wetting layer.

7. (original) The structure of claim 2, wherein the first metallic layer includes the adhesion layer and the barrier layer and the second metallic layer includes the wetting layer.

8. (original) The structure of claim 2, wherein a material of the adhesion layer is titanium or aluminum.

9. (original) The structure of claim 2, wherein a material of the barrier layer is selected from the group consisting of nickel-vanadium alloy, titanium nitride, tantalum nitride and nickel.

10. (original) The structure of claim 2, wherein a material of the wetting layer includes copper.

11. (original) The structure of claim 2, wherein a material of the second passivation layer is benzocyclobutene (BCB) or polyimide (PI).

12. (original) The structure of claim 2, wherein a material of the bumps includes tin/lead alloy.

13. (original) The structure of claim 2, wherein the bumps are in globular shapes or pillar shapes.

Claims 14-23 (cancelled)

24. (new) The structure of claim 1, wherein the second metallic layer is within an opening of the second passivation layer, and the second metallic layer is not in contact with the second passivation layer.